

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 9

IN THE MATTER OF:)	Docket No. EPAR9-CAA(112r)-2019- <u>3501</u>
)	
Starkist Samoa, Co.,)	ADMINISTRATIVE COMPLIANCE
)	ORDER ON CONSENT
Respondent.)	
)	
Proceeding under Section 113 of the)	
Clean Air Act, 42 U.S.C. § 7413.)	
)	

ADMINISTRATIVE COMPLIANCE ORDER ON CONSENT

A. PRELIMINARY STATEMENT

1. This Administrative Compliance Order (“Order”) is issued under the authority vested in the Administrator of the U.S. Environmental Protection Agency (“EPA”) by Section 113(a) of the Clean Air Act (“CAA”), 42 U.S.C. § 7413(a)(3) and (4).

2. On the EPA’s behalf, Amy C. Miller, Director, Enforcement and Compliance Assurance Division, Region 9 is delegated the authority to issue this Order under Section 113(a) of the CAA.

3. Respondent Starkist Samoa, Co. is a Delaware corporation with its principal place of business in Pago Pago, American Samoa. Respondent Starkist Samoa, Co. is a wholly-owned subsidiary of StarKist Co. Respondent Starkist Samoa, Co. is a “person” as defined in Section 302(e) of the CAA, 42 U.S.C. § 7602(e).

4. Respondent signs this Order on consent.

B. STATUTORY AND REGULATORY BACKGROUND

5. Pursuant to Section 112(r)(1) of the CAA, 42 U.S.C. § 7412(r)(1), the owners and operators of stationary sources producing, processing, handling or storing substances listed pursuant to Section 112(r)(3) of the CAA, 42 U.S.C. § 7412(r)(3), or any other extremely hazardous substance, have a general duty, in the same manner and to the same extent as 29 U.S.C. § 654, to identify hazards which may result from accidental releases of such substances using appropriate hazard assessment techniques, to design and maintain a safe facility taking such steps as are necessary to prevent releases, and to minimize the consequences of accidental releases which do occur.

6. Section 112(r)(2)(C) of the CAA, 42 U.S.C. § 7412(r)(2)(C), and the regulations at 40 C.F.R. § 68.3 define “Stationary Source” as, *inter alia*, any buildings, structures, equipment, installations or substance emitting stationary activities which belong to the same industrial group, which are located on one or more contiguous properties, which are under the control of the same person (or persons under common control) and from which an accidental release may occur.

7. Section 112(r)(2)(A) of the CAA, 42 U.S.C. § 7412(r)(2)(A), defines “Accidental Release” as an unanticipated emission of a regulated substance, as defined below, or other extremely hazardous substance into the ambient air from a stationary source.

8. Section 112(r)(2)(B) of the CAA, 42 U.S.C. § 7412(r)(2)(B), defines “Regulated Substance” as a substance listed pursuant to Section 112(r)(3) of the CAA. The list of substances regulated under Section 112(r) of the CAA is set forth at 40 C.F.R. § 68.130.

9. As used herein, the term “Extremely Hazardous Substance” shall mean an extremely hazardous substance within the meaning of Section 112(r)(1) of the CAA. Such substances include any chemical which may, as a result of short-term exposures because of releases to the air, cause death, injury or property damage due to its toxicity, reactivity, flammability, or corrosivity.

C. FINDINGS OF FACT

10. Respondent commenced operational control of the Samoa Tuna Processors, Inc. (“STP”) facility located at Route 1 Atu’u, American Samoa (the “Facility”) with the signing of a sublease with STP on May 16, 2018 for established permitted uses. The Facility is used for tuna refrigeration. The Facility is located within a populated residential, commercial, and industrial area and is adjacent to a major roadway.

11. At the Facility, Respondent handles, stores, and uses, and has handled, stored, and used, anhydrous ammonia. Anhydrous ammonia is an Extremely Hazardous Substance that is regulated by the CAA.

12. In order to comply with the requirements of Section 112(r)(1) of the CAA, owners and operators of facilities that use Extremely Hazardous Substances must, at a minimum, ensure that equipment and practices are consistent with recognized and generally accepted good engineering practices.

13. Due to the potential dangers associated with anhydrous ammonia, relevant industries have developed industry standards to control the risks associated with the use of these substances. Recognized industry standards and practices include, but are not limited to, those of the American National Standards Institute (“ANSI”) and the International Institute of Ammonia Refrigeration (“IIAR”).

14. The EPA conducted inspections of the Facility on May 24, 2016, June 1, 2016, and June 8, 2018. The EPA sent a Notice of Findings (“NOF”) to STP on April 24 and June 20, 2017, which outlined the findings of the 2016 inspections.

15. The NOF identified the following conditions at the Facility at the time of the inspection and potential areas of noncompliance with the General Duty clause under Section 112(r)(1) of the CAA.

- a. STP did not identify hazards which may result from accidental releases of anhydrous ammonia using appropriate hazard assessment techniques. There was no documentation of a hazard analysis done and Facility representatives were unaware of one ever being completed.
- b. STP did not have documentation that the Facility's refrigeration systems have been designed in a safe manner to prevent anhydrous ammonia releases. The following documentation was not observed or provided upon request:
 - i. P&IDs;
 - ii. Pressure relief system designs including calculations;
 - iii. Engine room ventilation system calculations;
 - iv. Materials of construction;
 - v. The safe upper and lower operating limits; and
 - vi. A list of refrigeration safety systems including interlocks.
- c. During the inspection, the EPA observed areas of the Facility's ammonia refrigeration system that were not designed to meet safety standards, including the following:
 - i. An oil pot valve (to the atmosphere) did not have a plug installed when not in use;
 - ii. Valves, vessels, and areas of piping were observed to have significant corrosion; the equipment was not being adequately maintained and problem areas were not being safely addressed;
 - iii. Several pressure relief valves were observed to be beyond their replacement date that was identified on their installation/replacement punch card;
 - iv. The refrigeration system equipment and piping were not tagged or labelled in accordance with IIAR's Bulletin 114. Valves were not tagged in most locations, piping was observed to have no labelling. Pressure relief valves observed did not have tags identifying the date of installation/replacement, or the tags were painted over; and
 - v. The ammonia sensor in the engine room for Freezer #2 had an alarm set point of 35 ppm ammonia. ANSI/IIAR 2-2014 § 6.13.1 requires at least one ammonia detector in the engine room with an alarm set point of 25 ppm ammonia.
- d. STP did not have an inspection testing and preventative maintenance program to ensure that the integrity of each of the refrigeration systems are maintained to prevent anhydrous ammonia releases. Facility representatives stated that

inspections were conducted at some frequency, but there was not a formalized inspection schedule that was established for equipment.

- e. STP did not have an emergency plan to minimize the consequences of accidental releases that may occur, although Facility representatives stated that they had a HAZWOPER trained response team. There was no Facility-wide alarm system, community alarm system, or any other document explaining the Facility's response to an accidental release of anhydrous ammonia.

16. Subsequent to the EPA's inspections in 2016, STP hired consultants to conduct a Process Hazard Analysis ("PHA") and Mechanical Integrity Inspection ("MI"), which were performed in March 2018. The PHA and MI resulted in findings and recommendations.

D. CONCLUSIONS OF LAW

17. Respondent is, and at all times referred to herein was, a "person" as defined by Section 302(e) of the CAA, 42 U.S.C. § 7602(e). With the May 16, 2018 execution of the sublease, Respondent became an operator of the Facility.

18. The Facility is a "Stationary Source" pursuant to Section 112(r)(2)(C) of the CAA and 40 C.F.R. § 68.3.

19. At the Facility, Respondent produces, processes, handles, and/or stores substances listed pursuant to Section 112(r)(3) of the CAA, 42 U.S.C. § 7412(r), and other Extremely Hazardous Substances.

20. Anhydrous ammonia is an Extremely Hazardous Substance listed at 40 C.F.R. Part 68 Appendix A, pursuant to Section 112(r)(3) of the CAA, 42 U.S.C. § 7412(r)(3).

21. Pursuant to Section 112(r)(1) of the CAA, Respondent had, and continues to have, a general duty, in the same manner and to the same extent as 29 U.S.C. § 654, to: (a) identify hazards which may result from accidental releases of a regulated substance or other extremely hazardous substance, using appropriate hazard assessment techniques, (b) design and maintain a safe facility taking such steps as are necessary to prevent releases, and (c) minimize the consequences of accidental releases which do occur.

22. Based on information available to the EPA, including information gathered during the inspections performed by the EPA at the Facility, other information provided by Respondent, and the Findings of Fact set forth above, the EPA has determined that Respondent failed to satisfy the general duty referred to in Paragraph 21 above. Therefore, Respondent violated the provisions of Section 112(r)(1) of the CAA, 42 U.S.C. § 7412(r)(1).

E. ORDER

23. Respondent is ordered to conduct the compliance program described in this section of this Order. All actions specified below shall be initiated and completed as soon as feasible, but in no event after the maximum time periods specified herein.

24. Within five (5) days of the Effective Date of this Order, Respondent shall certify to the EPA that it has equipped the emergency shutoff switches with tamper resistant covers and their operation complies with ANSI/IIAR 2-2014.

25. Within five (5) days of the Effective Date of this Order, Respondent shall certify to the EPA that it has completed items numbered 1-137, 139-223, 228, and 229 in the Mechanical Integrity Inspection Findings attached in Appendix 1.

26. Within five (5) days of the Effective Date of this Order, Respondent shall certify to the EPA that it has completed items numbered 1-65, 67-80, 82-87 in the PHA Recommendations attached in Appendix 2.

27. Within five (5) days of the Effective Date of this Order, Respondent shall certify to the EPA that it has identified the most critical locations where fire mitigation is needed.

28. Within five (5) days of the Effective Date of this Order, Respondent shall submit a report to the EPA identifying the fire mitigation measures to be installed at the Facility, which may include sprinklers, alarms, and smoke detectors. The report shall establish an installation schedule for each identified fire mitigation measure.

29. Respondent shall complete the installation of each fire mitigation measure no later than the deadlines established in the report submitted pursuant to paragraph 28 above. No later than ten (10) days after all fire mitigation measures have been installed, Respondent shall certify to the EPA that it has completed the installation of each fire mitigation measure.

30. As soon as practicable but in no event later than November 15, 2019, Respondent shall certify to the EPA that it has completed items numbered 224-227 and 230-232 of the Mechanical Integrity Inspections Finding attached in Appendix 1 and 66 in the PHA Recommendations attached in Appendix 2.

F. OTHER TERMS AND CONDITIONS

31. Respondent neither admits nor denies the findings in Sections C and D (Findings of Fact and Conclusions of Law) of this Order.

G. GENERAL PROVISIONS

32. Any violation of this Order may result in a civil administrative or judicial action for an injunction or civil penalties of up to \$99,681 per day per violation, or both, as provided in Sections 113(b)(2) and 113(d)(1) of the CAA, 42 U.S.C. §§ 7413(b)(2) and 7413(d)(1), as well as criminal sanctions as provided in Section 113(c) of the CAA, 42 U.S.C. § 7413(c). The EPA may use any information submitted under this Order in an administrative, civil judicial, or criminal action.

33. Nothing in this Order shall relieve Respondent of the duty to comply with all applicable provisions of the CAA or other federal, state or local laws or statutes, nor shall it restrict the EPA's authority to seek compliance with any applicable laws or regulations, nor shall

it be construed to be a ruling on, or determination of, any issue related to any federal, state, or local permit.

34. Nothing herein shall be construed to limit the power of the EPA to undertake any action against Respondent or any person in response to conditions that may present an imminent and substantial endangerment to the public health, welfare, or the environment.

35. The provisions of this Order shall apply to and be binding upon Respondent and their officers, directors, employees, agents, trustees, servants, authorized representatives, successors, and assigns. From the Effective Date of this Order until the Termination Date as set out in paragraph 44 below, Respondent must give written notice and a copy of this Order to any successors in interest prior to any transfer of ownership or control of any portion of or interest in the Facility. Simultaneously with such notice, Respondent shall provide written notice of such transfer, assignment, or delegation to the EPA. In the event of any such transfer, assignment, or delegation, Respondent shall not be released from the obligations or liabilities of this Order unless the EPA has provided written approval of the release of said obligations or liabilities.

36. Unless this Order states otherwise, whenever, under the terms of this Order, written notice or other document is required to be given, it shall be directed to the individuals specified at the addresses below, with the preference that all communications be made to the included email addresses in lieu of hard copies, unless those individuals or their successors give notice of a change of address to the other party in writing:

As to U.S. EPA:

Greg Bazley (Bazley.Greg@epa.gov)
U.S. Environmental Protection Agency
Chemical Accident Prevention Program
2445 Palm Drive, Ste. 100
Signal Hill, CA 90755

with copies to:

Melanie Shepherdson (Shepherdson.Melanie@epa.gov)
U.S. Environmental Protection Agency
Office of Regional Counsel (ORC-2)
75 Hawthorne St.
San Francisco, CA 94105

As to Starkist Samoa Co.:

Joong Bok Kim, General Manager
Starkist Samoa Co.
PO Box 368
Pago Pago, AS 96799-0368

with copies to:

Jeffrey S. Roberts, Senior Counsel and
Senior Manager Corporate Compliance
StarKist Co.
225 N. Shore Dr., Suite 400
Pittsburgh, PA 15212

All notices and submissions shall be considered effective upon receipt.

37. All submittals made under this Order shall include the following certification, signed by an officer of Respondent:

"I certify under penalty of law that I have examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment."

38. To the extent this Order requires Respondent to submit any information to the EPA, Respondent may assert a business confidentiality claim covering part or all of that information, but only to the extent and only in the manner described in 40 C.F.R. Part 2, Subpart B. The EPA will disclose information submitted under a confidentiality claim only as provided in 40 C.F.R. Part 2, Subpart B. If Respondent does not assert a confidentiality claim, the EPA may make the submitted information available to the public without further notice to Respondent.

39. Each undersigned representative of the Parties certifies that he or she is authorized to enter into the terms and conditions of this Order to execute and bind legally the Parties to this document.

H. EFFECTIVE DATE

40. Pursuant to Section 113(a)(4) of the CAA, an Order does not take effect until the person to whom it has been issued has had an opportunity to confer with the EPA concerning the alleged violations. By signing this Order, Respondent acknowledges and agrees that it has been provided an opportunity to confer with the EPA prior to issuance of this Order. Accordingly, this Order will take effect immediately upon signature by the latter of Respondent or the EPA.

I. JUDICIAL REVIEW

41. Respondent waives any and all remedies, claims for relief and otherwise available rights to judicial or administrative review that Respondent may have with respect to any issue of fact or law set forth in this Order, including any right of judicial review under Section 307(b)(1) of the Clean Air Act, 42 U.S.C. § 7607(b)(1).

J. TERMINATION

42. This Order shall terminate on the earlier of the following (the “Termination Date”) at which point Respondent shall operate in compliance with the CAA:

- a. One year after the Effective Date of this Order;
- b. The effective date of any determination by the EPA that Respondent has achieved compliance with all terms of this Order; or
- c. Immediately upon receipt by Respondent of notice from the EPA finding that an imminent and substantial endangerment to public health, welfare, or the environment has occurred.

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For the United States Environmental Protection Agency, Region 9:

9/6/19

Date



Amy C. Miller

Director, Enforcement and Compliance Assurance Division
U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 9
75 Hawthorne St.
San Francisco, CA 94105

For Starkist Samoa, Co.:

9/28/2019

Date

Jason . Kim

Joong Bok Kim
General Manager
Starkist Samoa., Co.

APPENDIX 1

Mechanical Integrity Inspection Findings for Samoa Tuna Processors
Process 2, Ammonia Refrigeration Process MI Recommendation Tracking
Date of Inspection: March 2018, by Centermark
Status Updated: October 26, 2018

#	EQUIP. NAME	FINDING DESCRIPTION	RECOMMENDATION	RATING
1	Ammonia Purifier - Vessel	Min Temp is illegible on nameplate due to corrosion	Obtain information from manufacturer	NC
2	Ammonia Purifier - Vessel	Certification drawing is not on file	Obtain copy from manufacturer	S
3	Ammonia Purifier - Vessel	Manufacturer data report is not on file	Obtain copy from manufacturer	S
4	Ammonia Purifier - Vessel	Appears vessel has had undocumented modifications - liquid nozzle and top sight glass	Verify against manufacturer drawing and data sheet or have vessel recertified or replace vessel or remove from service	NC
5	Ammonia Purifier - Vessel	Relief valve is higher capacity than recommended	Replace with lower capacity relief valve (helps with pressure drop noncompliance)	S
6	Ammonia Purifier - Vessel	Due to vessel volume - vessel is required to have dual relief valve assembly instead of single relief valve	Replace single relief valve with dual relief valve assembly	NC
7	Ammonia Purifier - Vessel	Pressure drop in relief valve discharge pipe is too high	Modify relief system per proposed relief design or alternative method	NC
8	Ammonia Purifier - Vessel	Vessel pressure level is not properly identified on label	Add "LOW" pressure level indication on label	NC
9	Ammonia Purifier - Vessel	Vessel supports are corroded	Clean, repair and paint	M
10	Ammonia Purifier - Vessel	Liquid nozzle has extensive wall loss due to corrosion	Have repaired and recertified by a vessel repair contractor or remove vessel from service	NC
11	Ammonia Purifier - Vessel	Top sight glass retainer ring is corroded	Replace retainer ring	M
12	Ammonia Purifier - Piping	Pipe is free from abnormal ice formations not verified due to ammonia purifier not functioning properly	Verify if left in service and started back up	M
13	Ammonia Purifier - Piping	Suction lines labels have incorrect service	Replace labels	NC
14	Ammonia Purifier - Piping	Extensive corrosion on liquid piping and valves from LP Recirculator Separator and LP Recirculator	Replace piping back to LP Recirculator connection points or remove vessel and piping from service	NC
15	Ammonia Purifier - Piping	Moderate corrosion on suction piping and valves back to LP Separator and LP Recirculator	Clean, paint and repair insulation	M

Mechanical Integrity Inspection Findings for Samoa Tuna Processors
 Process 2, Ammonia Refrigeration Process MI Recommendation Tracking
 Date of Inspection: March 2018, by Centernmark
 Status Updated: October 26, 2018

#	EQUIP. NAME	FINDING DESCRIPTION	RECOMMENDATION	RATING
16	Evaporator 1 - Evaporator	Nameplate covered with ice and facility documentation could not be confirmed	Thaw units to get pictures of nameplate and verify against facility documentation	S
17	Evaporator 1 - Evaporator	Unable to determine max operating pressure or min temperature from facility documentation	Obtain from nameplate or manufacturer	NC
18	Evaporator 1 - Piping	Pipe labels missing in cold store	Label tops and bottoms of pipes in cold store	NC
19	Evaporator 1 - Piping	Minor corrosion on hot gas line and valves	Clean and paint	M
20	Evaporator 2 - Evaporator	Nameplate covered with ice and facility documentation could not be confirmed	Thaw units to get pictures of nameplate and verify against facility documentation	S
21	Evaporator 2 - Evaporator	Unable to determine max operating pressure or min temperature from facility documentation	Obtain from nameplate or manufacturer	NC
22	Evaporator 2 - Piping	Pressure gauge on defrost regulator is defective	Replace	M
23	Evaporator 2 - Piping	Pipe labels missing in cold store	Label tops and bottoms of pipes in cold store	NC
24	Evaporator 2 - Piping	Minor corrosion on hot gas line and valves	Clean and paint	M
25	Evaporator 2 - Piping	Minor corrosion on defrost regulator	Clean and paint or replace	M
26	Evaporator 3 - Evaporator	Nameplate covered with ice and facility documentation could not be confirmed	Thaw units to get pictures of nameplate and verify against facility documentation	S
27	Evaporator 3 - Evaporator	Unable to determine max operating pressure or min temperature from facility documentation	Obtain from nameplate or manufacturer	NC
28	Evaporator 3 - Piping	Pressure gauge on defrost regulator is defective	Replace	M
29	Evaporator 3 - Piping	Pipe labels missing in cold store	Label tops and bottoms of pipes in cold store	NC
30	Evaporator 3 - Piping	Minor corrosion on hot gas line and valves	Clean and paint	M
31	Evaporator 3 - Piping	Minor corrosion on defrost regulator	Clean and paint or replace	M
32	Comp #B1 - Compressor	Slight visible corrosion	Clean and paint	M
33	Comp #B1 - Oil Separator	Relief valve is higher capacity than recommended	Replace with lower capacity relief valve (helps with pressure drop noncompliance)	S
34	Comp #B1 - Oil Separator	Pressure drop in relief valve discharge pipe is too high	Modify relief system per proposed relief design or alternative method	NC
35	Comp #B1 - Oil Separator	Minor corrosion on piping and frame	Clean and paint	M

MI Ratings: NC = Non-compliance, M = Maintenance, S= Suggestion

Mechanical Integrity Inspection Findings for Samoa Tuna Processors
 Process 2, Ammonia Refrigeration Process MI Recommendation Tracking
 Date of Inspection: March 2018, by Centernmark
 Status Updated: October 26, 2018

#	EQUIP. NAME	FINDING DESCRIPTION	RECOMMENDATION	RATING
36	Comp #B1 - Oil Separator	Oil return line connection fitting corroded	Replace fitting	NC
37	Comp #B1 - Oil Separator	Improper use of hose and hose has cracked	Remove or replace with steel tubing	NC
38	Comp #B1 - Oil Cooler	Nameplate is painted over	.Chemically remove paint so that nameplate is legible or replace oil cooler	NC
39	Comp #B1 - Oil Cooler	Unable to verify oil cooler was within operations limits against nameplate	Chemically remove paint so that nameplate is legible and verify or replace oil cooler	NC
40	Comp #B1 - Oil Cooler	Relief valve is higher capacity than recommended	Replace with lower capacity relief valve [helps with pressure drop noncompliance]	S
41	Comp #B1 - Oil Cooler	Pressure drop in relief valve discharge pipe is too high	Modify relief system per proposed relief design or alternative method	NC
42	Comp #B1 - Oil Cooler	Label missing on oil cooler	Label oil cooler	NC
43	Comp #B1 - Piping	Clevis hanger on booster discharge line is loose	Re-attach clevis hanger	M
44	Comp #B1 - Piping	Damaged insulation on suction line at compressor	Repair insulation	M
45	Comp #B1 - Piping	Paint is failing on discharge pipe.	Clean and paint	M
46	Comp #B1 - Piping	Corrosion on internal relief pilot valve	Replace and test	M
47	Comp #H1 - Compressor	Unable to verify compressor was operating below max compression ratio	Obtain from manufacturer prior to operating as swing machine - is below max comp ratio as high stage	M
48	Comp #H1 - Compressor	Unable to verify compressor was operating below max discharge pressure	Verify at start up	M
49	Comp #H1 - Compressor	Unable to verify compressor was operating below max crankcase pressure	Verify at start up	M
50	Comp #H1 - Compressor	Coupling missing	Install and verify alignment at start up	M
51	Comp #H1 - Compressor	Unable to verify compressor was free from excessive vibration	Verify at start up	M
52	Comp #H1 - Compressor	Glycerin in Suction, Discharge and Oil pressure gauges has turned brown	Replace glycerin and verify operation of gauges	M

Mechanical Integrity Inspection Findings for Samoa Tuna Processors
 Process 2, Ammonia Refrigeration Process MI Recommendation Tracking
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#	EQUIP. NAME	FINDING DESCRIPTION	RECOMMENDATION	RATING
53	Comp #H1 - Compressor	Unable to verify operation of discharge, suction and oil safeties	Verify at start up	M
54	Comp #H1 - Compressor	Relief valve is higher capacity than recommended	Replace with lower capacity relief valve [helps with pressure drop noncompliance]	S
55	Comp #H1 - Compressor	Pressure drop in relief valve discharge pipe is too high	Modify relief system per proposed relief design or alternative method	NC
56	Comp #H1 - Oil Separator	Unable to verify compressor was operation below max oil separator pressure	Verify at start up	M
57	Comp #H1 - Oil Separator	Certification drawing is not on file	Obtain copy from manufacturer	S
58	Comp #H1 - Oil Separator	Manufacturer data report is not on file	Obtain copy from manufacturer	S
59	Comp #H1 - Oil Separator	Relief valve is higher capacity than recommended	Replace with lower capacity relief valve [helps with pressure drop noncompliance]	S
60	Comp #H1 - Oil Separator	Pressure drop in relief valve discharge pipe is too high	Modify relief system per proposed relief design or alternative method	NC
61	Comp #H1 - Oil Separator	Vessel pressure level is not properly identified on label	Add "HIGH" pressure level indication on label	NC
62	Comp #H1 - Oil Separator	Slight visible corrosion	Clean and paint	M
63	Comp #H1 - Oil Cooler	Unable to verify oil cooler was operating below max operating pressure	Verify at start up	M
64	Comp #H1 - Oil Cooler	Certification drawing is not on file	Obtain copy from manufacturer	S
65	Comp #H1 - Oil Cooler	Manufacturer data report is not on file	Obtain copy from manufacturer	S
66	Comp #H1 - Oil Cooler	Relief valve is higher capacity than recommended	Replace with lower capacity relief valve [helps with pressure drop noncompliance]	S
67	Comp #H1 - Oil Cooler	Pressure drop in relief valve discharge pipe is too high	Modify relief system per proposed relief design or alternative method	NC
68	Comp #H1 - Oil Cooler	Relief valve is past due for replacement	Replace relief valve	NC
69	Comp #H1 - Piping	Gauges need to be replaced	Replace pressure gauges	M
70	Comp #H1 - Piping	Suction isolation valve packing nut is corroded	Replace packing nut	M

Mechanical Integrity Inspection Findings for Samoa Tuna Processors
 Process 2, Ammonia Refrigeration Process MI Recommendation Tracking
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#	EQUIP. NAME	FINDING DESCRIPTION	RECOMMENDATION	RATING
71	Comp #H1 - Piping	Pull out connection on compressor is corroded	Replace nipple welded to suction tee	NC
72	Comp #H1 - Piping	Minor corrosion on suction strainer housing	Clean, paint and repair insulation	M
73	Comp #H1 - Piping	Bolts and studs for strainer cover and suction check are corroded	Replace studs and bolts with ANSI A307B bolts and stud with A563A Heavy Hex nuts	M
74	Comp #H1 - Piping	Minor corrosion on piping and frame	Clean and paint	M
75	Comp #H1 - Piping	Extensive corrosion on oil filter housing	Replace prior to start up	NC
76	Comp #H1 - Piping	Unsupported section of oil line piping between compressor and oil cooler	Install additional pipe supports	NC
77	Comp #H1 - Piping	Extensive corrosion on section of oil return line above oil cooler	Replace before start up	NC
78	Comp #H1 - Piping	Various drain and vent valves missing plugs	Replace plugs before start up	NC
79	Comp #H1 - Piping	Pressure gauge missing from oil pressure regulator	Replace gauge before start up	M
80	Comp #H1 - Piping	Bent sensing tubes for oil and suction pressure	Replace before start up	NC
81	Comp #H2 - Compressor	Excessive motor noise and jolt during start up	Investigate and resolve	M
82	Comp #H2 - Compressor	Slight visible corrosion	Clean and paint	M
83	Comp #H2 - Oil Separator	Relief valve is higher capacity than recommended	Replace with lower capacity relief valve (helps with pressure drop noncompliance)	S
84	Comp #H2 - Oil Separator	Pressure drop in relief valve discharge pipe is too high	Modify relief system per proposed relief design or alternative method	NC
85	Comp #H2 - Oil Separator	Vessel pressure level is not properly identified on label	Add "HIGH" pressure level indication on label	NC
86	Comp #H2 - Oil Separator	Relief valves mistagged as H1	Replace tags	NC

Mechanical Integrity Inspection Findings for Samoa Tuna Processors
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#	EQUIP. NAME	FINDING DESCRIPTION	RECOMMENDATION	RATING
87	Comp #H2 - Oil Separator	Slight visible corrosion	Clean and paint	M
88	Comp #H2 - Oil Cooler	Certification drawing is not on file	Obtain copy from manufacturer	S
89	Comp #H2 - Oil Cooler	Manufacturer data report is not on file (copy on file does not match serial number on nameplate)	Obtain copy from manufacturer	S
90	Comp #H2 - Oil Cooler	Relief valve is higher capacity than recommended	Replace with lower capacity relief valve (helps with pressure drop non-compliance)	S
91	Comp #H2 - Oil Cooler	Pressure drop in relief valve discharge pipe is too high	Modify relief system per proposed relief design or alternative method	NC
92	Comp #H2 - Oil Cooler	Oil cooler is not labeled	Label oil cooler	NC
93	Comp #H2 - Oil Cooler	Slight visible corrosion	Clean and paint	M
94	Comp #H2 - Heat Recovery	Certification drawing is not on file	Obtain copy from manufacturer	S
95	Comp #H2 - Heat Recovery	Slight visible corrosion	Clean and paint	M
96	Comp #H2 - Piping	Improper use of hose for pull out connection	Remove or replace with steel tubing	NC
97	Comp #H2 - Piping	Unsupported section of pipe for pull out and old liquid injection oil cooling line	Provide additional pipe support	NC
98	Comp #H2 - Piping	Slight visible corrosion	Clean and paint	M
99	Condenser - Condenser	Extensive corrosion on fan housings and bottom support flanges, active corrosion on other surfaces	Reinforce with support of structural engineer, replace sections with OEM parts or replace entire condenser	NC
100	Condenser - Piping	Extensive corrosion (below Tmin in multiple locations) on purge, equalizer and high pressure liquid drain line (from condenser to interior of machine room	Replace the purge, equalizer and high pressure liquid drain lines - the use of stainless steel piping in this location is recommended	NC
101	Condenser - Piping	Minor pitting corrosion on High Stage Discharge (HSD) lines from machine room wall to condenser	Clean and paint	M
102	General Safety	Signage missing for Contractor, ammonia and oil quantity and test pressure	Develop and post appropriate signage	NC
103	General Safety	Signage missing for emergency instructions with contact numbers	Develop and post appropriate signage	NC

Mechanical Integrity Inspection Findings for Samoa Tuna Processors
Process 2, Ammonia Refrigeration Process MI Recommendation Tracking
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#	EQUIP. NAME	FINDING DESCRIPTION	RECOMMENDATION	RATING
104	General Safety	Signage is missing for evacuation plan	Develop and post appropriate signage	NC
105	General Safety	Aisles in machinery room are not clearly marked	Mark aisles	NC
106	General Safety	No emergency shower / eyewash outside machine room door	Install emergency shower / eyewash	NC
107	General Safety	No emergency shower / eyewash at condenser level	Install emergency shower / eyewash	S
108	General Safety	Air packs staged outside machine room are not response ready - dirty and past due for inspections	Get air packs response ready	NC
109	General Safety	Only single air pack stage outside machine room - insufficient for buddy (two person minimum) response as required	Add second air pack to allow for buddy response	NC
110	General Safety	Abandoned sensing line for high stage discharge missing plug	Remove nipple and install pipe plug	NC
111	Heat Recovery - Heat Exchanger	Certification drawing is not on file	Obtain copy from manufacturer	S
112	Heat Recovery - Heat Exchanger	Manufacturer data report is not on file [copy on file does not match serial number on nameplate]	Obtain copy from manufacturer	S
113	Heat Recovery - Heat Exchanger	Heat exchanger is not labeled	Add label	NC
114	Heat Recovery - Heat Exchanger	Carrier bar for plates and back plate has extensive corrosion	Replace carrier bar or remove heat recovery heat exchanger from service as this unit is no longer in use	NC
115	Heat Recovery - Heat Exchanger	Compression bolts have extensive corrosion and cannot be adjusted or reused	Replace bolts or remove heat recovery heat exchanger from service as this unit is no longer in use	NC
116	Heat Recovery - Heat Exchanger	Supports for fixed plate are corroded	Clean and paint	M
117	Heat Recovery - Piping	Pressure gauge is corroded	Replace pressure gauge	M
118	Heat Recovery - Piping	HSD outlet pipe has minor corrosion on bottom	Clean and paint	M
119	High Pressure Rcvr - Vessel	Cannot verify vessel is operating above min temp due to nameplate not being legible	Obtain design data from manufacture or have vessel recertified or replaced	NC
120	High Pressure Rcvr - Vessel	Certification drawing is not on file	Obtain copy from manufacturer	S

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#	EQUIP. NAME	FINDING DESCRIPTION	RECOMMENDATION	RATING
121	High Pressure Rcvr - Vessel	Manufacturer data report is not on file (copy on file does not match serial number on nameplate)	Obtain copy from manufacturer	S
122	High Pressure Rcvr - Vessel	Relief valve is higher capacity than recommended	Replace with lower capacity relief valve (helps with pressure drop noncompliance)	S
123	High Pressure Rcvr - Vessel	Pressure drop in relief valve discharge pipe is too high and vent discharges into alleyway	Modify relief system per proposed relief design or alternative method	NC
124	High Pressure Rcvr - Vessel	Slight visible corrosion	Clean and paint	M
125	High Pressure Rcvr - Vessel	One pressure gauge is too low of range for service and other is defective	Replace pressure gauges	M
126	High Pressure Rcvr - Piping	Improper type elbow (malleable) used for pressure gauge	Replace fitting	NC
127	High Pressure Rcvr - Piping	Slight visible corrosion on piping and valves	Clean and paint	M
128	IP Separator - Vessel	Unable to verify vessel is operating above Min Temperature or below Max Pressure due to missing or covered name plate	Remove insulation to find nameplate or have vessel recertified or replace vessel	NC
129	IP Separator - Vessel	Certification drawing is not on file	Obtain copy from manufacturer	S
130	IP Separator - Vessel	Manufacturer data report is not on file (copy on file does not match serial number on nameplate)	Obtain copy from manufacturer	S
131	IP Separator - Vessel	Relief valve is higher capacity than recommended	Replace with lower capacity relief valve (helps with pressure drop noncompliance)	S
132	IP Separator - Vessel	Pressure drop in relief valve discharge pipe is too high and vent discharges into alleyway	Modify relief system per proposed relief design or alternative method	NC
133	IP Separator - Vessel	Relief valve 803 is past due for replacement	Replace relief valve	NC
134	IP Separator - Oil Pot	Unable to verify vessel is operating above Min Temperature or below Max Pressure due to missing or covered name plate	Find nameplate or have vessel recertified or replace vessel	NC
135	IP Separator - Oil Pot	Certification drawing is not on file	Obtain copy from manufacturer	S
136	IP Separator - Oil Pot	Manufacturer data report is not on file (copy on file does not match serial number on nameplate)	Obtain copy from manufacturer	S
137	IP Separator - Oil Pot	No relief valve installed - one is necessary due to lack of pressure differential between vessels	Install relief valve per proposed relief design or alternative method	NC

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#	EQUIP. NAME	FINDING DESCRIPTION	RECOMMENDATION	RATING
139	IP Separator - Piping	Extensive corrosion on small bore piping on level column	replace small bore piping on level column	NC
140	IP Separator - Piping	Extensive corrosion on gauge valve and nipple on suction line from IP to H1 and H2	Remove or replace	NC
141	IP Separator - Piping	Slight corrosion on piping and valves	Clean and paint	M
142	IP Separator - Piping	Slight vapor retarder leaks on vessel and piping	Repair vapor retarder seals	M
143	IP Separator - Piping	Valve handles are corroded and inoperable	Remove (if not used frequently or needed in an emergency) or replace (if used frequently or needed in an emergency)	M
144	LP Recirculator - Vessel	Certification drawing is not on file	Obtain copy from manufacturer	S
145	LP Recirculator - Vessel	Manufacturer data report is not on file (copy on file does not match serial number on nameplate)	Obtain copy from manufacturer	S
146	LP Recirculator - Vessel	Pressure setting of installed relief valves are higher than the Max Allowable Working Pressure (MAWP)	Replace relief valves with ones with lower set pressure	NC
147	LP Recirculator - Vessel	Relief valve is higher capacity than recommended	Replace with lower capacity relief valve (helps with pressure drop noncompliance)	S
148	LP Recirculator - Vessel	Pressure drop in relief valve discharge pipe is too high and vent discharges into alleyway	Modify relief system per proposed relief design or alternative method	NC
149	LP Recirculator - Vessel	Vessel pressure level is not properly identified on label	Add "LOW" pressure level indication on label	NC
150	LP Recirculator - Vessel	Slight corrosion on three-way valve	Clean and paint	M
151	LP Recirculator - Vessel	Slight vapor retarder leak on vessel and piping	Repair vapor retarder seals	M
152	LP Recirculator - Oil Pot	Unable to verify vessel is operating above Min Temperature or below Max Pressure due to missing or covered name plate	Find nameplate on vessel or have vessel recertified or replace vessel	NC
153	LP Recirculator - Oil Pot	Certification drawing is not on file	Obtain copy from manufacturer	S
154	LP Recirculator - Oil Pot	Manufacturer data report is not on file (copy on file does not match serial number on nameplate)	Obtain copy from manufacturer	S

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#	EQUIP. NAME	FINDING DESCRIPTION	RECOMMENDATION	RATING
155	LP Recirculator - Oil Pot	No relief valve installed - one is necessary due to lack of pressure differential between vessels	Install relief valve per proposed relief design or alternative method	NC
156	LP Recirculator - Oil Pot	Slight visible corrosion	Clean and Paint	M
157	LP Recirculator - Pump 940	Unable to verify if free from excess vibration as pump would not run	Verify upon repair and restart of pump	M
158	LP Recirculator - Pump 940	Unable to verify operation of safeties	Verify upon repair and restart of pump	M
159	LP Recirculator - Pump 940	Slight surface corrosion and failing paint	Clean and paint	M
160	LP Recirculator - Pump 944	Slight surface corrosion and failing paint	Clean and paint	M
161	LP Recirculator - Pump 940	Bracing has corroded through on vertical pipes	Replace bracing	M
162	LP Recirculator - Piping	LP(Liquid feed to LP) support is inadequate	Install additional pipe supports	NC
163	LP Recirculator - Piping	Liquid feed valves defrost and drop ice onto walkway when system cycles off	Add pan or catch for ice or insulate valves or relocate valves	NC
164	LP Recirculator - Piping	Pressure gauge on oil pot is defective	Replace pressure gauge	NC
165	LP Recirculator - Piping	Extensive corrosion on small bore piping on level column	replace small bore piping on level column	NC
166	LP Recirculator - Piping	Valve handles are corroded and inoperable	Remove (if not used frequently or needed in an emergency) or replace (if used frequently or needed in an emergency)	M
167	LP Recirculator - Piping	Fittings for connecting tubing to differential pressure switch for pumps are corroded	Replace fittings	M
168	PO Package - Compressor	Unable to verify if system was operating within limitations due to it not being used	Verify at start up	M
169	PO Package - Compressor	Unable to verify condition of drive system due to it not being used	Verify at start up	M
170	PO Package - Compressor	Unable to verify if free from excess vibration due to it not being used	Verify at start up	M
171	PO Package - Compressor	Pressure gauges are defective	Replace pressure gauges	M

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#	EQUIP. NAME	FINDING DESCRIPTION	RECOMMENDATION	RATING
172	PO Package - Compressor	Unable to verify operation of compressor safeties due to it not being used	Verify at start up	M
173	PO Package - Compressor	Compressor relief valve set point is too high	Replace relief valve with one with lower set pressure	NC
174	PO Package - Compressor	Pressure drop in relief valve discharge pipe is too high and vent discharges into alleyway	Modify relief system per proposed relief design or alternative method	NC
175	PO Package - Oil Separator	Unable to verify vessel is operating above Min Temperature or below Max Pressure due to missing or covered name plate	Find nameplate on vessel or have vessel recertified or replace vessel	NC
176	PO Package - Oil Separator	Certification drawing is not on file	Obtain copy from manufacturer	S
177	PO Package - Oil Separator	Manufacturer data report is not on file (copy on file does not match serial number on nameplate)	Obtain copy from manufacturer	S
178	PO Package - Oil Separator	Appears vessel has had undocumented modifications - lifting eye and nozzles	Verify against manufacturer drawing and data sheet or have vessel recertified or replace vessel or remove from service	NC
179	PO Package - Oil Separator	Relief valve is higher capacity than recommended	Replace with lower capacity relief valve (helps with pressure drop noncompliance)	S
180	PO Package - Oil Separator	Due to vessel volume - vessel is required to have dual relief valve assembly instead of single relief valve	Replace single relief valve with dual relief valve assembly	NC
181	PO Package - Oil Separator	Pressure drop in relief valve discharge pipe is too high and vent discharges into alleyway	Modify relief system per proposed relief design or alternative method	NC
182	PO Package - Ammonia Separator	Too small to adequately protect compressor from liquid slugging	Replace with adequately sized vessel	S
183	PO Package - Ammonia Separator	Unable to verify vessel is operating above Min Temperature or below Max Pressure due to missing or covered name plate	Find nameplate on vessel or have vessel recertified or replace vessel	NC
184	PO Package - Ammonia Separator	Certification drawing is not on file	Obtain copy from manufacturer	S
185	PO Package - Ammonia Separator	Manufacturer data report is not on file (copy on file does not match serial number on nameplate)	Obtain copy from manufacturer	S
186	PO Package - Ammonia Separator	No relief valve installed - one is necessary due to lack of pressure differential between vessels	Install relief valve per proposed relief design or alternative method	NC
187	PO Package - Piping	Improper support welded to discharge pipe	Replace with proper support	NC
188	PO Package - Piping	Unable to verify abnormal ice formation on pipe due to system not being used	Verify upon start up	M

Mechanical Integrity Inspection Findings for Samoa Tuna Processors
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#	EQUIP. NAME	FINDING DESCRIPTION	RECOMMENDATION	RATING
189	PO Package - Piping	Several drain and vent valves are missing pipe plugs or caps	Replace missing pipe plugs or caps	NC
190	PO Package - Piping	All the pressure gauges are defective	Replace pressure gauges	M
191	PO Package - Piping	Extensive corrosion on pipes and valves at the bottom of the oil separator and ammonia separator	Replace piping and valves	NC
192	PO Package - Piping	Improper fittings used at pressure gauges	Replace with 300lb FS fitting	NC
193	PO Package - Piping	Improper method used to cap abandoned lines on suction manifold	Replace caps with proper pipe fitting	NC
194	PO Package - Piping	Line from discharge manifold goes through wall into alleyway and is not properly capped	Remove line back to manifold and install proper cap or pipe plug	NC
195	Purger - Heat Exchanger	Relief valve capacity is higher than recommended	Replace with lower capacity relief valve (helps with noncompliance due to pressure drop)	S
196	Purger - Heat Exchanger	Relief valve piping to termination is not correct - pressure drop is too high	Modify relief system per proposed relief design or alternative method	NC
197	Purger - Heat Exchanger	Purger is not properly identified	Add "LOW" pressure designation to label	NC
198	Purger - Heat Exchanger	Does not appear to be functioning properly	Remove from system, clean, rebuild, pressure test, repaint on bench and reinstall prior to start up	S
199	Purger - Heat Exchanger	Paint is failing	Remove from system, clean, rebuild, pressure test, repaint on bench and reinstall prior to start up	M
200	Purger - piping	No ice on purger or suction line - should have some ice on them if operating properly	Verify at start up after rebuild	M
201	Purger - piping	Pressure gauge is defective	Replace pressure gauge	M
202	Purger - piping	PU line is labeled at LIQ instead of VAP in static section of label	Replace with label with VAP in static section of label	NC
203	Purger - piping	HPL line is labeled as PU line	Replace labels on HPL with PU labels	NC

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#	EQUIP. NAME	FINDING DESCRIPTION	RECOMMENDATION	RATING
204	Purger - piping	Thermostatic Expansion Valve (TXV) power head and sensing bulb capillaries are corroded and failing	Replace TXV's	M
205	Purger - piping	Paint is failing	Remove from system, clean, rebuild, pressure test, repaint on banch and reinstall prior to start up	M
206	Evaporator 1 - Evaporator	Unable to verify unit is free from excessive vibration as unit was not in service	Verify upon start up	M
207	Evaporator 1 - Evaporator	Coil is very dirty	Clean coil	S
208	Evaporator 1 - Evaporator	Evaporator is not labeled and there is no indication of ammonia inside the equipment	Label evaporator and include ammonia on the label	NC
209	Evaporator 1 - Piping	Unable to verify abnormal ice formation on pipe due to system not being used	Verify upon start up	M
210	Evaporator 1 - Piping	Liquid line at evaporator has extensive corrosion	Replace liquid line	NC
211	Evaporator 2 - Evaporator	Unable to verify unit is free from excessive vibration as unit was not in service	Verify upon start up	M
212	Evaporator 2 - Evaporator	Coil is very dirty	Clean coil	S
213	Evaporator 2 - Evaporator	Evaporator is not labeled and there is no indication of ammonia inside the equipment	Label evaporator and include ammonia on the label	NC
214	Evaporator 2 - Piping	Unable to verify abnormal ice formation on pipe due to system not being used	Verify upon start up	M
215	Evaporator 2 - Piping	Liquid line at evaporator has extensive corrosion	Replace liquid line	NC
216	Receival Room Evaporator Headers	Unable to verify abnormal ice formation on pipe due to system not being used	Verify upon start up	M
217	Receival Room Evaporator Headers	Pressure gauge is defective	Replace pressure gauge	M
218	Receival Room Evaporator Headers	Pipe labels missing or faded	Replace labels	NC
219	Receival Room Evaporator Headers	Liquid line has slight corrosion in machine room at wall for cold store	Clean and paint and insulate 1 ft back from cold room to reduce condensation on pipe	M

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#	EQUIP. NAME	FINDING DESCRIPTION	RECOMMENDATION	RATING
220	Receival Room Evaporator Headers	Liquid line has extensive corrosion outside and at roof penetrations to Receival Room	Replace or remove from service	NC
221	Receival Room Evaporator Headers	Suction line has slight corrosion at pressure regulator where not covered with insulation	Clean and paint	M
222	Receival Room Evaporator Headers	Insulation jacket damaged by Cold Store evaporator valve groups	Reseal vapor barrier and repair jacket	M
223	Receival Room Evaporator Headers	Booster discharge line has moderate corrosion	Either replace or clean and provide protective coating to prevent recurrence	M
224	Ventilation	Emergency ventilation exhaust rate (cfm) is less than required by International Mechanical Code - 2012	Upgrade ventilation system to meet requirement - Need minimum of 88,665 cfm , non-sparking blade, explosion proof motor if in air stream, vertical discharge with velocity of 2,500 ft./minute	NC
225	Ventilation	Continuous ventilation failure alarm not installed	Install method of detecting loss of continuous ventilation	NC
226	Ventilation	Continuous ventilation failure alarm not verified	Install and test	NC
227	Ventilation	Existing intake louver is too small for required ventilation rate (open gate at North East corner)	Will need to install 50,000 cfm of supply air	NC
228	Ventilation	No method to start emergency ventilation from outside machinery room - not required if fan runs at or above emergency ventilation rate continuously.	Install method to start ventilation system remotely or run continuously	NC
229	Ventilation	No reset button for emergency shutdown or ventilation system activation inside machine room (should be the only reset button)	Add reset button	NC
230	Ventilation	No signage for emergency light or horn to identify emergency condition	Develop and post appropriate signage	NC
231	Ventilation	Inadequate cooling to limit temperature rise to 18F above ambient	Additional emergency ventilation will meet this requirement	NC
232	Ventilation	Openings to other areas of the facility do not have tight sealing doors	Install doors in opening to all other areas of the facility	NC

APPENDIX 2

March 2018 PHA Recommendations
 Anhydrous Ammonia Refrigeration Process(es) Freezer #1 and Freezer #2
 TriMarine Group - Samoa Tuna Processors
Status Update: 10/25/18

Recommendations	Rec. Category	What if Ref. Number	Checklist Reference	March 2018 MI Inspection Reference	Risk Rank Index		MI Rating
					Before Action	After Action	
1. Develop written operating procedures for condensers; include normally open and normally closed valves for various operating phases; place procedures/valve line ups at the equipment control panel.	Documentation	1.1.10 1.1.11 1.1.29 1.1.30 8.1.15 12.2.3 12.2.9 12.3.1 12.3.3	Human Factors: Procedures 2.7.1, 2.7.2		1	2	NA
2. Develop pumpdown/lockout tagout procedures for condensers.	Documentation	1.1.11 7.1.2 8.1.15 8.1.15 12.1.3 12.1.6 12.2.3 12.3.6	None		1	3	NA
3. Add check of condenser pressure and water supply to round check sheet.	Documentation	1.1.12 1.1.23	None		2	2	NA

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Anhydrous Ammonia Refrigeration Process(es) Freezer #1 and Freezer #2
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Recommendations	Rec. Category	What if Ref. Number	Checklist Reference	March 2018 MI Inspection Reference	Risk Rank Index		MI Rating
					Before Action	After Action	
4. Develop written PM procedures/checksheets for condensers (PMs should include checks of support structures, water piping, fans, inspection of nozzles, inspection of tubes, etc.) per IIAR B 110.	Documentation	1.1.13 1.1.18 1.1.20 1.1.22 1.1.24 1.1.28 12.1.17 12.2.3 12.3.2 12.3.3	None	Freezer 2: 99 (issue with corrosion on condenser)	1	2	NC
5. Continue with plans to inspect condenser supports and body (Mechanical Integrity Inspection March 2018; ensure deficiencies, if any, are addressed.	Maintenance	1.1.13	None	Freezer 2: 99	1	2	NC
6. Ensure that ladders for condenser access are dedicated to area and checked as part of the PMs for the condenser.	Administration	1.1.16	None	None	4	4	NA
7. In the future, ensure mechanical integrity inspections are conducted at least every five years by an outside contractor.	Maintenance	1.1.18	None	None	1	3	NA
8. Ensure condenser at Freezer 1 is marked as a confined space.	Administration	1.1.19	None	None	1	2	NA

FE3273/Tri Marine STP Ammonia Refrigeration System What-If 2018
 MI Ratings: NC = Non-compliance, M = maintenance, S = Suggestion

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March 2018 PHA Recommendations
Anhydrous Ammonia Refrigeration Process(es) Freezer #1 and Freezer #2
TriMarine Group - Samoa Tuna Processors
Status Update: 10/25/18

Recommendations	Rec. Category	What if Ref. Number	Checklist Reference	March 2018 MI Inspection Reference	Risk Rank Index		MI Rating
					Before Action	After Action	
9. Develop procedure for manual purging which indicates when and how to purge.	Documentation	1.1.26 2.1.1 2.1.4 2.1.8 12.1.1 12.2.3 12.3.2	Human Factors: Procedures 2.7.8	None	1	2	NA
10. Consider stainless steel piping for pipe replacements identified as needed by the mechanical integrity inspection for the condenser.	Engineering	1.1.28 7.1.1	None	Freezer 2: 100	1	2	NC
11. Ensure compressor cutouts are checked regularly for proper operation.	Maintenance	1.1.29 1.1.30	None	Freezer 1: 6,7; Freezer 2: 53	2	2	M
12. Implement the use of the electrical VFD checklist.	Documentation	1.1.31	None	None	2	2	NA
13. Confirm UPS is working for Freezer 1 to support PLC.	Engineering	1.1.32	None	None	2	2	NA

FE3273/Tri Marine STP Ammonia Refrigeration System What-If 2018
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Recommendations	Rec. Category	What if Ref. Number	Checklist Reference	March 2018 MI Inspection Reference	Risk Rank Index		MI Rating
					Before Action	After Action	
14. Establish PM procedures and schedule for the purgers.	Documentation	2.1.1 2.1.3 2.1.5	None	None		2	2
15. When P&IDs are revised, depict purger pressure relief.	Documentation	2.1.1 12.3.7	None	None	1	2	NA
16. Develop pumpdown/lockout tagout procedures for purgers.	Documentation	2.1.2 2.1.4 2.1.8 7.1.2 8.1.15 8.1.15 12.1.3 12.1.6 12.2.3 12.3.6	Human Factors: Procedures 27.8				NA

FE3273/Tri Marine STP Ammonia Refrigeration System What-If 2018
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Recommendations	Rec. Category	What if Ref. Number	Checklist Reference	March 2018 MI Inspection Reference	Risk Rank Index		MI Rating
					Before Action	After Action	
17. Establish a valve exercising PM and checksheet for hand valves; include lubrication with the appropriate lubricant defined.	Maintenance	2.1.3 8.1.3 8.1.5 8.1.8 8.1.9 8.1.10 8.1.11 8.1.13 8.1.19 8.1.20 8.1.23 8.1.29 8.1.32 12.1.6	None	Corroded valves identified.			
18. Establish program and procedures for PM for relief valve inspection and replacement.	Documentation	3.1.1 3.1.4 3.1.5 3.2.5	None	Freezer 2: 133, relief valve 803 past due for replacement	1	2	NC

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Recommendations	Rec. Category	What if Ref. Number	Checklist Reference	March 2018 MI Inspection Reference	Risk Rank Index		MI Rating
					Before Action	After Action	
19. Develop and implement a procedure to change water in ammonia-absorbing water drum frequently; ensure manual purging procedure includes check of water drum prior to purging.	Documentation	2.1.5	None	None	2	2	NA
20. Implement Computerized Maintenance Management Software or other system to track preventive and repair maintenance.	Documentation	3.1.1 3.1.4 3.1.5 3.1.11 3.1.12 8.1.29 9.2.5 9.2.10 9.2.11 9.2.12	None	Issues were identified that were the result of inconsistent maintenance practices.	1	2	NA

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Recommendations	Rec. Category	What if Ref. Number	Checklist Reference	March 2018 MI Inspection Reference	Risk Rank Index		MI Rating
					Before Action	After Action	
21. Continue with plans to develop relief design information for Freezer 1 and 2 and implement recommendations from study.	Engineering	3.1.2 3.1.3 6.1.19 7.1.4 12.3.7	None	Freezer 1: 10,11,12, 16,17,18, 32,33,34, 37,38,51, 52,53,121, 122,123, 130,131, 136,159, 160 Freezer 2: 5, 6,7,33,34, 40,41,54, 55,59,60, 66,67,68, 83,84,90, 91,122, 123,131, 132,133, 137,146, 147,148, 155,173, 174,179, 180,181, 186,195, 196	NC	2	
22. Develop list of relief valves specified for the equipment they protect.	Documentation	3.1.11 3.1.12 6.1.19	None		1	2	NA

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Anhydrous Ammonia Refrigeration Process(es) Freezer #1 and Freezer #2
TriMarine Group - Samoa Tuna Processors
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Recommendations	Rec. Category	What if Ref. Number	Checklist Reference	March 2018 MI Inspection Reference	Risk Rank Index		MI Rating
					Before Action	After Action	
23. Develop written operating procedures for pressure vessels; include normally open and normally closed valves for various operating phases; place procedures/value line ups at the equipment control panel.	Documentation	3.1.13 3.1.14 3.2.1 3.2.3 3.2.7 3.2.10 3.2.12 3.2.13 8.1.15 12.2.3 12.2.9 12.3.1 12.3.3	Human Factors: Procedures 2.7.1, 2.7.2	None			
		3.1.15	None	NA	1	2	
24. Ensure refrigeration oil is stored separately from the machinery room.	Operations						
25. Continue with plans to add a check for plugs/caps to monthly checklist.	Documentation	3.1.16 4.1.13 5.1.3 6.1.37 8.1.7	None	None	2	2	NC
				Freezer 2: 188 drain and vent valve plugs or caps missing			
					2	2	

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Recommendations	Rec. Category	What if Ref. Number	Checklist Reference	March 2018 MI Inspection Reference	Risk Rank Index		MI Rating
					Before Action	After Action	
26. Establish a policy for using spotters when operating a forklift near vessels and in the machinery room.	Documentation	3.1.17 3.1.18 3.1.22 6.1.34 7.1.9	None	None	1	2	NA
27. Consider signage/warnings near vessel level gauges.	Administration	3.1.17 3.1.18 12.1.11 12.3.7	None	None	1	2	NA
28. Develop written PM procedures for pressure vessels; include visual inspections for corrosion as well as periodic integrity inspection. (See IIAR B 110 for inspection recommendations for insulated and uninsulated vessels.)	Documentation	3.1.19 3.1.20 3.2.10 12.1.17 12.2.3 12.3.2 12.3.3	No 15, Facility Design/ Maintenance		1	2	NA
29. Establish PM to check for valve tags and pipe labeling.	Documentation	3.1.21 7.1.12 8.1.14	Human Factors: Component Labeling 2.3.4	Various MI findings related to pipe labeling.	2	2	NC

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					Before Action	After Action	
30. Consider catwalks for vessel area.	Engineering	3.1.23 7.1.17 8.1.18	None	None	2	3	NA
31. Develop written PM program and checksheets for compressors; include oil analysis and oil changes.	Documentation	3.1.24 3.4.1 6.1.2 6.1.5 6.1.6 6.1.9 6.1.12 6.1.14 6.1.16 6.1.17 6.1.22 6.1.23 6.1.25 6.1.27 6.1.29 6.1.30 6.1.35 12.1.17 12.2.3 12.3.2 12.3.3	None	None	1	2	NA

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					Before Action	After Action	
32. Ensure operators are trained on written PM and operating procedures once they are developed.	Administration	3.1.24 3.2.1 3.2.3 3.3.3 3.4.1 4.1.20 5.2.10 5.2.12 6.1.18 8.1.23 8.1.24 8.1.32 12.2.2 12.2.11 12.2.13	Human Factors: Training 2.8.8	None	1	2	NA
33. Develop written operating procedures for air units; include defrost operation.	Documentation	3.2.1 5.2.6 5.2.9 5.2.13 8.1.15 12.2.3 12.2.9 12.3.1 12.3.3	Human Factors: Procedures 2.7.1, 2.7.2	None	1	2	NA

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Recommendations	Rec. Category	What if Ref. Number	Checklist Reference	March 2018 MI Inspection Reference	Risk Rank Index		MI Rating
					Before Action	After Action	
34. Develop written PM procedures and checksheets for checking level cutouts and other safeties.	Documentation	3.2.2 3.3.5 6.1.38 9.1.10 9.1.21 12.1.17 12.2.3 12.3.2 12.3.3	None	None			
					1	2	N/A
35. Develop written procedure for oil pot/oil rectifier oil draining and implement checksheet for oil draining.	Documentation	3.3.3 8.1.15 8.1.28 12.1.5 12.1.17 12.2.3 12.3.1 12.3.2 12.3.3 12.3.6 12.3.6	Human Factors: None Procedures 2.7.1				
					1	2	N/A
36. Develop procedures and checksheet for water line maintenance (water cooled compressors) and cleaning of oil cooling tubing.	Documentation	3.5.1 12.2.3 12.3.2	None	None			
					1	2	N/A

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					Before Action	After Action	
37. Develop written compressor crankcase oil draining procedures; include valve numbers.	Documentation	3.6.1 3.6.3 3.6.4 6.1.26 12.2.3 12.2.9 12.3.1 12.3.3	Human Factors: Procedures 2.7.1, 2.7.8		1	2	NA
38. Check to see if relief is required for oil pot at Freezer 1; address findings related to pressure relief on oil pot if identified in the mechanical integrity report (March 2018).	Maintenance	3.6.1 3.6.3	None	Freezer 1: 136	1	3	NC
39. Remove or blank off purifier tank since it is not being used.	Maintenance	3.8.1 8.1.20	None	Freezer 2: 1 - 15	2	3	NC
40. Research operation of pumps to understand pressure relief function.	Administration	4.1.2 4.1.4 4.1.5 4.1.8 4.1.12	None	None	2	3	NA

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					Before Action	After Action	
41. Develop written PM procedures for pumps; include duty selection check.	Documentation	4.1.11 12.1.17 12.2.3 12.3.2 12.3.3	None	None	1	3	NA
42. Develop pump down/lockout tagout procedures for pumps.	Documentation	4.1.12 4.1.20 4.1.22	Human Factors: Procedures 2.7.8	None	2	3	NA
43. Consider posting P&IDs in machinery room for operator reference.	Documentation	4.1.20 8.1.15 12.3.7	None	None	1	2	NA
44. Develop operating procedures for pumps which include valve line-ups.	Documentation	4.1.21 4.1.22 8.1.15 12.2.3 12.3.3	None	None	1	2	NA

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					Before Action	After Action	
45. Develop PM procedures and checksheet for evaporators; include checks of pan, coils, heaters.	Documentation	5.1.1 5.1.5 5.1.6 5.2.2 5.2.3 5.2.4 5.2.7 5.2.8 5.2.9 5.2.10 5.2.13 5.2.20 5.2.21 5.2.25 5.2.26 12.2.3 12.3.2	None	None	2	NA	
46. Add ammonia sensors to Freezer 1 evaporator valve room and Freezer 2 evaporator room and valve area per IIAR-2 2014.	Engineering	5.1.1 5.1.2 5.1.5 5.2.13 9.2.1 9.2.2 9.2.6 9.2.8	None	None	1	2	NA

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Recommendations	Rec. Category	What if Ref. Number	Checklist Reference	March 2018 MI Inspection Reference	Risk Rank Index		MI Rating
					Before Action	After Action	
47. Develop pump down/lockout tagout procedures for evaporators and under-the-floor heat exchanger.	Documentation	5.1.2 5.2.7 5.2.12	None	None	2	2	NA
48. Ensure Freezer 1 door is operating and repaired during refresh before startup to prevent ice build.	Maintenance	5.1.6 5.2.24	None	Not operating during MI Inspection	2	3	NA
49. Check roof integrity at Freezer 1 and 2.	Maintenance	5.1.6 5.2.24	None	None	2	3	NA
50. Hang safety bars to protect Freezer 2 air units at receiving/sorting area.	Engineering	5.1.7	None	Freezer 1: 60,81,91, 102	3	3	M
51. Remove or cut and blank off piping to the "PHE" heat exchanger which is no longer in use.	Engineering	5.3.1	None	None	2	3	NA
52. Establish a PM for the under-the-floor heat exchanger. Research recommended maintenance, checks, and monitoring for glycol heat exchange systems.	Documentation	5.3.1 5.3.2 5.3.4 5.3.5	None	None	2	2	NA
53. Develop written operating procedures for the under-the-floor heat exchanger.	Documentation	5.3.2	Human Factors: Procedures 2.7.1, 2.7.2	None	2	2	NA

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Recommendations	Rec. Category	What if Ref. Number	Checklist Reference	March 2018 MI Inspection Reference	Risk Rank Index		MI Rating
					Before Action	After Action	
54. Develop written operating procedures for compressors; include valves line ups and safe upper and lower limits.	Documentation	6.1.2 6.1.4 6.1.6 6.1.13 6.1.24 6.1.31 6.1.32 6.1.40 8.1.15 8.1.15 12.2.3 12.2.9 12.3.1 12.3.3	Human Factors: Procedures 2.7.1, 2.7.2	N/A	1	3	N/A
55. Develop pumpdown/lockout procedures for compressors.	Documentation	6.1.13 6.1.28 7.1.2 8.1.15 12.1.3 12.1.6 12.2.3 12.3.6	None	None	1	3	N/A
56. Update P&IDs. Ensure crankcase heaters on compressors are depicted.	Documentation	6.1.15 12.3.7	None	None	1	2	N/A

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					Before Action	After Action	
57. Develop written procedure for adding oil to compressors; include PPE required for this task.	Documentation	6.1.18 12.2.3 12.3.1 12.3.2 12.3.3 12.3.6 12.3.6	Human Factors: Procedures 2.7.1, 2.7.8	None			
58. Remove or disconnect and blank off pumpout compressor which is no longer being used.	Maintenance	6.3.1 8.1.31	None	Freezer 2: 168 – 194 (deficiencies with pump out package)	2	3	NC
59. Verify piping installed is correct schedule and material for service and that welds are appropriate; see mechanical integrity inspection (March 2018) for deficiencies and replace pipe as needed.	Maintenance	7.1.1	None	Review MI findings.	1	2	Review MI findings

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Recommendations	Rec. Category	What if Ref. Number	Checklist Reference	March 2018 MI Inspection Reference	Risk Rank Index		MI Rating
					Before Action	After Action	
60. Develop PM procedures and checksheet for ammonia piping; include associated insulation.	Documentation	7.1.1 7.1.3 12.2.3 12.3.2	None	None			
61. Address March 2018 mechanical integrity inspection recommendations regarding piping support. (ANSI/IIAR 2-2014 Chapter 5, and Appendix F (Informative)).	Maintenance	7.1.5 7.1.7 12.3.7	Siting: Roadways 1.7.2, 1.7.10	Freezer 2: 9 (vessel support corrosion); 76 (HI piping support); 97 (H2 piping support); 99 (condenser structure); 116 (HX support); 187 (PO piping, improper support)	1	2	NC

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Recommendations	Rec. Category	What if Ref. Number	Checklist Reference	March 2018 MI Inspection Reference	Risk Rank Index		MI Rating
					Before Action	After Action	
62. Implement mechanical integrity inspection recommendations regarding the replacement and integrity of insulation.	Maintenance	7.1.6 7.1.8 7.1.10	None	Review MI findings.	3	3	Review MI findings
63. Implement a process to manage changes ("Management of Change").	Documentation	7.1.8	Human Factors: Training 2.8.10	None	3	3	NA
64. Consider implementing and using a line break permit for opening lengths of refrigeration piping and other equipment.	Documentation	7.1.14 7.1.19 8.1.26	None	None	2	3	NA
65. Determine if Howden compressor will be repaired and re-commissioned and/or re-piped as a swing machine or removed and blanketed-off; address as appropriate.	Maintenance	8.1.20	None	Freezer 2: multiple findings on Howden	2	3	Multiple
66. Complete recommendations from ventilation study; upgrade ventilation so it meets IIR-2 2014 (Chapter 6); ensure documentation regarding upgraded ventilation is retained.	Engineering	10.1.1 10.1.2 10.1.3 12.1.14 12.1.20 12.4.18 12.12.6, 12.12.7, 12.12.8, 12.12.9	Siting: Electrical Classification 1.12.1, 1.12.2, 1.12.3, 1.12.4, 1.12.5,	Freezer 1: 168 - 177 Freezer 2: 224 - 232	1	2	NC

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Recommendations	Rec. Category	What if Ref. Number	Checklist Reference	March 2018 MI Inspection Reference	Risk Rank Index		MI Rating
					Before Action	After Action	
67. Develop detailed ammonia charging procedure for both Freezer 1 and Freezer 2; include cylinder receipt and inspection, valve numbers, hose checks, signage required, purity requirements, and ammonia specifications.	Documentation	11.1.1 11.1.4 11.1.6 11.1.8 11.1.9 11.1.10 11.1.11 11.1.12	Human Factors: Procedures 2.71.1				
					1	2	NA
68. Ensure sign is used to warn employees when ammonia unloading is occurring.	Administration	11.1.2 11.1.7	None	None	2	2	NA
69. Ensure ventilation study for Freezer 2 considers unloading of ammonia cylinder.	Documentation	11.1.3 12.4.18	None	Freezer 1: 168 – 177 Freezer 2: 224 - 232	1	2	NA
70. Ensure new ammonia hose is received as planned and old ammonia hose is discarded and not used for charging.	Administration	11.1.4	None	None	1	2	NA
71. Confirm height of SRV discharge and document the height.	Documentation	12.1.10	None		2	3	NA
72. Install a wind sock for emergency evacuation purposes.	Administration	12.1.13 12.4.1	Human Factors: Component Labeling 2.3.4				NA
					2	2	

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Recommendations	Rec. Category	What if Ref. Number	Checklist Reference	March 2018 MI Inspection Reference	Risk Rank Index		MI Rating
					Before Action	After Action	
73. Develop a cyclone preparation checklist for PEO team to follow.	Documentation	12.1.13 12.4.17	Siting: Roadways 1.7.2	None	2	2	NA
74. Install eye wash and safety showers for both Freezer 1 and 2 per ANSI/IIR 2-2014 and IIAR Bulletin 109; give attention to condenser deck areas where access to a safety shower or source of water may be difficult in an emergency.	Engineering	12.1.18	None	Freezer 2: 106 and 107	3	3	NC
75. Ensure adequate lighting is provided on the condenser deck.	Engineering	12.2.1	Siting: Misc. 1.13.12; Human Factors: Housekeeping 2.1.7	None			NA
					2	3	

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					Before Action	After Action	
76. Review findings on mechanical integrity inspection; if equipment documentation is missing, obtain it.	Documentation	12.2.3 12.3.7	None	Freezer 1: 10 (Comp Separator), 15 (Comp oil cooler), 31 (Comp Separator), 36 (Comp cooler), 50 (Economizer), 120 (HPR), 129 (LPR), 135 (LPR OP) Freezer 2: 1,2,3,4 (Purifier); 16, 17, (Evap 1); 20, 21 (Evap 2); 26, 27 (Evap 3); 47, 57, 58, 64, 65, 88, 89, (compressor s); 94, 111, 112 (heat recovery), 119, 120, 121 (HPR); 128, 129, 130 (IP Sep); 134, 135, 136 (IP	1	2	NC

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					Before Action	After Action	
				OP; 144, 145 (LP Recirc); 152, 153, 154 (LP OP); 175, 176, 177, 178, 183, 184, 185 (pump out package).			
77. Develop PM procedures for ventilation, alarms and interlocks.	Documentation	12.2.3 12.3.2	Siting: Electrical Classification 1.12.11	None			
78. After procedures are developed, establish a time period for review and update periodically.	Administration	12.3.4	None	None	1	3	NA
79. When developing procedures, ensure employees are involved.	Administration	12.3.5	None	None	1	3	NA

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					Before Action	After Action	
80. Conduct an ammonia evacuation drill for the current personnel.	Administration	12.4.2 12.4.8 12.4.9 12.4.11 12.4.12 12.4.14	Siting: Location of Process 1.8.1, 1.8.2, 1.8.3, 1.8.6, 1.8.7, 1.8.8, Misc. 1.13.16	None			
81. Address lack of sprinklers, alarms, and smoke detectors in the buildings. To reduce cost, identify the most critical locations where fire mitigation is needed.	Engineering	12.4.13	Siting: Ignition Sources 1.5.12, Administration Buildings 1.6.4, Location of Process 1.8.2, Misc. 1.13.14; Human Factors: Housekeeping 2.1.6				

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					Before Action	After Action	
82. Confirm that at least two SCBAs are available for escape in each control room.	Administration		Siting: Control Room 1.4.17	Freezer 1: 117, 118 Freezer 2: 108, 109	2	3	NC
83. During the next drill, discuss with local responders how to address impacts/communication with neighbors during an emergency.	Administration		Siting: Location of Process 1.8.2, 1.8.6, 1.8.7, 1.8.8 Human Factors: Training 2.8.6, 2.8.7	None	1	3	NA
84. Provide means to limit the spread of liquid ammonia spills in the machinery room, especially Freezer 1 where curbing may be a good option.	Engineering		Siting: Location and Adequacy of Drains 1.10.2	None	1	3	NA

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					Before Action	After Action	
85. Consider ways to keep water in the eyewashes/showers from getting too hot.	Engineering		Siting: Location of Emergency Stations 1.11.3	None	2	3	NA
86. Consider developing an offsite consequence analysis for an ammonia leak to assist with response planning.	Documentation		Siting: Misc. 1.13.3, 1.13.4, 1.13.5	None	1	3	NA
87. Consider developing a formal hearing conservation program.	Documentation		Siting: Misc. 1.13.11; Human Factors, Housekeeping 2.1.5	None	2	3	NA

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